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ABSTRACT

Reported are data which describe the 1976 employment and educational characteristics of recent science and engineering graduates involved in energy-related activities. This information is from the 1976 National Survey of Recent Science and Engineering Graduates, a survey of about 9,800 persons who received bachelor's or master's degrees between 1973 and 1975. Major conclusions presented deal with race, sex, type of employer, salary, and field of study. Comparisons of recent graduates with experienced workers are also made. Contained in the appendix are the questionnaires used and some technical notes on the survey. (Author/WB)

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ENERGY-RELATED SCIENTISTS AND ENGINEERS: STATISTICAL PROFILE OF NEW ENTRANTS INTO THE WORK FORCE, 1976

Jane E. Rall

SE 033 621

Manpower Research Programs

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Jane E. Rall
Manpower Research Programs

October 1978

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Oak Ridge Associated Universities
Oak Ridge, Tennessee 37830

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ABSTRACT

This report presents data describing the 1976 employment and educational characteristics of recent science and engineering graduates involved in energy-related activities. Data are from the *1976 National Survey of Recent Science and Engineering Graduates*, a survey of about 9800 persons who received bachelor's or master's degrees between 1973 and 1975.

Of the 724,000 persons represented by the survey, 33,000 indicated they were involved in energy-related work. Roughly one-third of these were scientists and two-thirds, engineers. The energy-related respondents were more apt to have received higher degrees than the total population of recent science and engineering graduates. Both females and nonwhites are underrepresented in the energy-related group. The new energy-related workers are most often employed by private industry and report a higher median salary than do all recent graduates.

A comparison of the recent graduates with experienced workers indicates greater involvement in energy-related work by new engineers and less by new scientists than by their experienced counterparts. The percentage who are female of the new energy-related scientists and engineers is much higher than the percentage for the experienced energy-related group; this trend is not found for nonwhites.

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INTRODUCTION

This report presents data describing the 1976 employment and educational characteristics of recent college graduates from science and engineering programs. Section 1 compares data for the energy-related with all recent graduates who are new entrants into the work force. A recent study produced similar data for experienced scientists and engineers from a different survey.[1] Section 2 compares the data on energy-related scientists and engineers from the two surveys.

DATA

The data in Section 1 come from the *1976 National Survey of Recent Science and Engineering Graduates*, which was conducted by Westat, Inc. (Rockville, Maryland), for the National Science Foundation (NSF). Information was obtained from a sample of 9812 persons who earned bachelor's or master's degrees between July 1, 1973, and June 30, 1975. The reader should keep in mind that the survey of recent graduates does not include persons receiving doctorate degrees.

Section 2 compares the recent graduate data to data from the *1976 National Survey of Natural and Social Scientists and Engineers*, which was conducted by the Bureau of the Census for NSF. This is one in a series of surveys of a group of persons who were identified as scientists or engineers in the 1970 Census of Population. Thus, it does not include persons who were not in the labor force in 1970. The data presented here from the survey of experienced scientists and engineers have been restricted to persons whose highest degree is a bachelor's or master's (thus excluding persons with doctorates, "other," or no degree).

DEFINING THE ENERGY-RELATED SCIENTISTS AND ENGINEERS

In this report, *energy-related* is used to denote the subpopulation of scientists and engineers who indicated in the survey they devoted a significant portion of their professional time to the energy problem, one of several areas of critical national interest from which the respondents could choose.

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[1]Michael G. Finn and Jane E. Rall. *Energy-Related Scientists and Engineers: Statistical Profile from the NSF National Sample, 1976* (Oak Ridge, Tennessee: Oak Ridge Associated Universities) May 1978. ORAU-143.

(The actual question used in the new entrants survey is reproduced in Figure 1.)[2]

13. Listed below are selected topics of critical national interest. If you devoted a significant proportion of your professional time to any of these problem areas in the week of June 7, 1976, please check the box for the one on which you spent the MOST time.

Education:
- Teaching. . . . . 1 ☐
- Other . . . . . 2 ☐

Health. . . . . 3 ☐
Defense . . . . . 4 ☐
Environmental protection, pollution control . . . . . 5 ☐
Space . . . . . 6 ☐
Crime prevention and control. . . . . 7 ☐
Food production and technology. . . . . 8 ☐
Energy and fuel . . . . . 9 ☐
Other mineral resources . . . . . .10 ☐
Community development and services. . . .11 ☐
Housing (planning, design, construction).12 ☐
Transportation. . . . . .13 ☐
Other (Specify): _____ 88 ☐
None of the above . . . . . .14 ☐

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*.

Figure 1. Question Used To Identify Energy-Related Scientists and Engineers

Note that the question permits respondents to select only one of the topics mentioned. Therefore, some of the persons working on the health or environmental effects of energy production can be expected to have chosen "health" or "environmental protection, pollution control" instead of "energy and fuel." Thus, what results from a tabulation of persons who selected "energy and fuel" might be described as a core group of energy-related manpower.

It should also be noted that the question on the *1976 National Survey of Natural and Social Scientists and Engineers* differed slightly from the one above. It did not include the choices of "transportation" or "other," nor did it restrict the respondent to considering his time during a specific reference week. Thus, those responding to the new entrants survey may be under-represented for comparison purposes.

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[2]For convenience, the term *new entrant* is used to refer to those who received bachelor's or master's degrees between 1973 and 1975. However, some may have joined the labor force earlier and completed their degree while working.

Data on the new entrants were gathered from a questionnaire mailed to recent graduates (Appendix A) and from telephone interviews. Since the question used to determine energy-relatedness (Figure 1) was not asked in the telephone survey, the data have been adjusted to more accurately reflect the actual situation.[3] Further information on sample size can be found in Appendix B.

The reader should also be aware of the fact that the respondents to the *1976 National Survey of Recent Science and Engineering Graduates* were given one list from which to choose both their degree and employment specialty. Respondents to the survey of experienced scientists and engineers had separate lists from which to choose their major field of study and occupational categories, and each separate list differed slightly from the single list used by the new entrants to the work force (Appendix C shows a copy of the Bureau of the Census questionnaire). Both college major and occupational field categories from the two surveys were matched as closely as possible and aggregated into the groups that appear in this report (see Appendix B for more details).

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[3]It was assumed that the telephone survey respondents in a given field would display similar characteristics to those answering the mailed survey. Thus, the frequency counts for the energy-related in each college major and occupational field were multiplied by the ratio of the number of total respondents to the number of mail-survey respondents for that field.

SECTION 1 — NEW ENERGY-RELATED SCIENTISTS AND ENGINEERS IN THE WORK FORCE IN 1976

The new entrants into the work force can be classified as scientists or engineers either by their major field of study for the highest degree held or by their current employment specialty. Throughout this section, data will usually be presented for both definitions (major field and employment specialty) of scientists and engineers, although where it is deemed more appropriate, only one characterization is used.

MAJOR FIELD OF STUDY VERSUS OCCUPATION

Of the 724,000 persons represented by the *1976 National Survey of Recent Science and Engineering Graduates*, 4.6% indicated they devoted a significant portion of their professional time to energy-related work during the reference week of June 7, 1976. Of those whose college major was engineering, 17.5% indicated an involvement in energy-related activities while only 1.8% of the science majors indicated this was the case (Table 1). Environmental science majors were the only science majors to be significantly involved in energy-related activities.

Looking at the percentage who are energy-related in each occupational category, one can see that almost one-third of the recent graduates working as mechanical or chemical engineers and over one-quarter of those working as environmental scientists are doing energy-related work (Table 2).[1]

Table 3 compares the major field of study with the current occupation of the respondents. In general, engineers are more likely than scientists to be working in the same field as their college major. This trend also holds true for the energy-related engineers and scientists. However, the data in Table 3 also indicate that the new energy-related scientists and engineers are more likely to have an occupation in the same field as their college major (79.9%) than are the total population of new scientists and engineers (48.9%).

EDUCATIONAL ATTAINMENT

Tables 4 and 5 show that recent graduates devoting a significant portion of their professional time to the energy problem are more apt to have received higher degrees tnan the total population of recent science and engineering graduates. Roughly 20% of all new entrants into the work force have a master's

[1]The reader should note that all of the recent graduates who indicated they devoted a significant portion of their time to energy and fuel were working either full-time or part-time during the reference week.

or higher degree; while 33% of those involved in energy-related work have master's degrees. It can be noted that it is primarily the energy-related scientists that account for the higher educational attainment of the energy-related population. While only 17.8% of the recent science majors have received a master's or higher degree, 34.0% of the science majors involved in energy-related activities have master's degrees.

The same trend is apparent when looking at persons who are working as scientists. Here 40.2% of the energy-related scientists have a master's or higher degree as opposed to 31.8% of all new scientists.

SEX

Data on the sex of recent graduates are presented in Table 6. Females account for 29.1% of the new science and engineering majors but only 8.3% of the energy-related science and engineering majors. Females are also underrepresented in energy-related activities when scientists and engineers are classified by occupation (6.7% of the energy-related versus 19.3% of all scientists and engineers). However, if one considers just the new engineers, the percentage who are female is roughly the same or higher for the energy-related as for the entire population of recent graduates.

RACE

Table 7 shows that the percentage of energy-related scientists and engineers who are nonwhite is significantly lower than the percentage for all new scientists and engineers. While 6.5% of the recent graduates working as engineers are nonwhite, only 2.3% of the energy-related engineers are nonwhite; and while 5.6% of those working as scientists are nonwhite, only 1.7% of the energy-related scientists are.

TYPE OF EMPLOYER

Most of the new engineers and a sizable number of new scientists are employed by private industry. However, among the energy-related, even larger proportions of engineers and scientists are employed by private industry: 81.4% of engineers and 65.6% of scientists (Table 8). Educational institutions employ the next largest percentage of the new energy-related engineers (7.4%) and scientists (21.4%). Because of the concentrations of the energy-related scientists and engineers working for these two types of employers, the percentage of energy-related scientists and engineers working for the government or nonprofit organizations is generally much lower than the percentage for all new scientists and engineers.

PRIMARY WORK ACTIVITY

Percentage distributions of the new scientists and engineers by primary work activity are presented in Table 9. The energy-related are more likely to be involved in applied research, design, and production activities and less likely to be involved in management and teaching than the total population of new entrants into the work force. This is not surprising when one considers that the new energy-related workers are primarily engineers and design and production activities are more common to engineers than to scientists.

EARNINGS

The median annual salary for the new energy-related scientists and engineers employed full-time in 1976 was $15,000 (Table 10). This is about 36% higher than the median salary of all recent graduates who were working full-time during the reference week of June 7, 1976. Energy-related engineers reported salaries 6% higher than all new engineers, and energy-related scientists had salaries approximately 20% higher than all new scientists. The highest salaries reported by the energy-related group came from chemical and civil engineers; of the energy-related scientists, the environmental scientists reported the highest median salary. The fields with the higher median salaries tend to be the fields that also have a higher percentage of energy-related workers. The greatest differences in median salaries between the total and energy-related groups are found for the environmental scientists (18% by occupation, 34% by college major) and civil engineers (16% by occupation, 15% by college major).

The salary differences between the total and energy-related groups are more pronounced for recent graduates with bachelor's degrees than those with master's degrees (Tables 11 and 12). Energy-related engineers with bachelor's degrees had a median salary approximately 8% higher than all engineers with bachelor's degrees; energy-related scientists with bachelor's degrees had a median salary approximately 20% higher than all scientists with the same educational attainment. In contrast, for those whose highest degree held was a master's degree, median salaries for energy-related engineers were virtually the same as for all engineers, while median salaries for scientists were between 10% and 20% higher for the energy-related.

Table 1. Major Field of Study for Highest Degree Held, Total Versus Energy-Related New Entrants

Major	Total[1]	Energy-Related	Percentage Energy-Related
Engineering	129,582	22,651	17.5%
Chemical	10,312	2,396	23.2
Civil	20,572	3,411	16.6
Electrical or Electronic	32,693	4,682	14.3
Mechanical	21,454	5,266	24.5
Other	44,551	6,896	15.5
Science	580,205	10,455	1.8
Physical	43,546	1,854	4.3
Environmental	10,574	1,775	16.8
Other	526,085	6,826	1.3
Other	13,965	54	.4
Not Reported	-	-	
Total	723,752	33,160	4.6

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

[1]Due to fractional weights, some frequencies may be in error by as much as 212.

Table 2. Occupation, Total Versus Energy-Related New Entrants

Occupation	Total[1]	Energy-Related	Percentage Energy-Related
Engineer	110,825	23,296	21.0%
Chemical	8,657	2,508	29.0
Civil	14,559	2,485	17.1
Electrical or Electronic	25,002	4,631	18.5
Mechanical	14,879	4,678	31.4
Other	47,728	8,994	18.8
Scientist	179,146	6,051	3.4
Physical	18,342	1,200	6.5
Environmental	6,627	1,761	26.6
Other	154,177	3,090	2.0
Other	267,193	3,733	1.4
Not Reported	166,608	200	.1
Total	723,772	33,280	4.6

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

[1]Due to fractional weights, some frequencies may be in error by as much as 212.

Table 3. Comparison of Major Field of Study for Highest Degree Held and Occupation, Total Versus Energy-Related New Entrants

Major	Total (Thousands)	Percentage with Occupation Same as College Major
Science and Engineering		
Total	710	48.9%
Energy-Related	33	79.9
Engineering		
Total	130	81.1
Energy-Related	23	91.1
Science		
Total	580	40.0
Energy-Related	10	55.5

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

NOTE: For the purposes of this table, a person whose major field of study for the highest degree held is any area of engineering (science) is considered to have an occupation the same as his college major if his current employment is in any type of engineering (science).

Table 4. Educational Attainment by Major Field of Study for Highest Degree Held, Total Versus Energy-Related New Entrants

Major	Total			Energy-Related		
	Bachelor's	Master's	Doctorate	Bachelor's	Master's	Doctorate
Engineering	68.9%	30.1%	1.0%	66.1%	33.2%	0.6%
Chemical	74.3	22.6	3.2	62.6	37.4	0
Civil	66.6	33.4	0	59.9	40.1	0
Electrical or Electronic	70.3	28.7	1.0	69.5	30.5	0
Mechanical	79.5	19.2	1.3	78.7	21.3	0
Other	62.5	36.7	.7	58.6	39.3	2.0
Science	82.1	16.8	1.0	66.0	34.0	0
Physical	74.4	24.6	1.0	62.6	37.4	0
Environmental	70.0	30.0	0	52.1	47.9	0
Other	83.0	15.9	1.1	70.5	29.5	0
Other	0	90.3	9.7	0	100.0	0
Total	78.2	20.6	1.2	66.0	33.6	.4

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 5. Educational Attainment by Occupation, Total Versus Energy-Related New Entrants

Occupation	Total			Energy-Related		
	Bachelor's	Master's	Doctorate	Bachelor's	Master's	Doctorate
Engineer	68.8%	30.5%	0.7%	65.6%	33.8%	0.6%
Chemical	71.5	26.5	2.0	59.1	40.9	0
Civil	64.2	35.8	0	60.5	39.5	0
Electrical or Electronic	66.3	32.4	1.3	63.3	36.7	0
Mechanical	80.2	19.0	.7	81.8	18.2	0
Other	67.4	32.1	.5	61.5	36.9	1.6
Scientist	68.2	29.3	2.5	59.8	40.2	0
Physical	73.8	24.9	1.4	62.7	37.3	0
Environmental	61.5	38.5	0	45.5	54.5	0
Other	67.8	29.4	2.7	66.8	33.2	0
Other	88.6	11.0	.4	80.1	19.9	0
Total	78.1	20.8	1.2	66.2	33.4	.4

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 6. Percentage Female, Total Versus Energy-Related New Entrants

	Total	Energy-Related
Major		
Science and Engineering	29.1%	8.3%
Engineering	2.5	3.1
Science	35.0	19.5
Occupation		
Scientists and Engineers	19.3	6.7
Engineers	3.4	3.7
Scientists	29.1	18.3

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 7. Percentage Nonwhite, Total Versus Energy-Related New Entrants

	Total	Energy-Related
Major		
Science and Engineering	6.5%	2.4%
Engineering	6.8	3.1
Science	6.4	1.0
Occupation		
Scientists and Engineers	6.0	2.2
Engineers	6.5	2.3
Scientists	5.6	1.7

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 8. Type of Employer by Occupation, Total Versus Energy-Related New Entrants

Type of Employer	All Scientists and Engineers		Engineers		Scientists	
	Total	Energy-Related	Total	Energy-Related	Total	Energy-Related
Educational Institution	20.4%	10.3%	7.0%	7.4%	28.8%	21.4%
Nonprofit Organization	10.0	2.2	1.3	1.5	15.4	4.7
Federal Government	10.6	5.7	12.3	5.6	9.5	6.5
State and Local Government	11.1	2.1	5.3	2.1	14.8	1.9
Private Industry	46.1	78.1	73.2	81.4	29.2	65.6
Other	1.8	1.6	.9	2.0	2.3	0

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 9. Primary Work Activity by Occupation, Total Versus Energy-Related New Entrants

Primary Work Activity	All Scientists and Engineers		Engineers		Scientists	
	Total	Energy-Related	Total	Energy-Related	Total	Energy-Related
Management or Administration	12.5%	8.8%	13.9%	9.2%	11.5%	7.4%
Basic Research	11.1	6.6	3.8	4.9	15.7	13.6
Applied Research	9.1	14.1	8.1	11.6	9.7	23.4
Development	10.8	10.9	14.5	10.3	8.5	13.2
Design	9.8	19.8	22.7	24.6	1.8	.8
Teaching	6.8	1.1	2.1	.4	9.8	4.1
Report and Technical Writing	2.0	1.6	1.3	.8	2.4	4.6
Production	6.3	12.1	9.7	13.9	4.1	5.2
Consulting	3.9	5.8	4.2	6.2	3.6	4.6
Quality Control, Inspection, Testing	6.1	6.8	7.4	6.2	5.4	9.0
Sales, Marketing, Purchasing, Estimating	2.0	1.9	2.8	2.0	1.6	1.5
Other	19.5	10.6	9.5	10.0	25.8	12.7

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

Table 10. Median Salary, Total Versus Energy-Related New Entrants

Field	Occupation			Major		
	Total	Energy-Related	Ratio of Energy-Related to Total	Total	Energy-Related	Ratio of Energy-Related to Total
Engineer	$15,000	$15,900	1.06	$15,000	$15,900	1.06
Chemical	16,200	16,900	1.04	16,200	16,800	1.04
Civil	14,000	16,200	1.16	14,000	16,100	1.15
Electrical or Electronic	15,000	15,900	1.06	14,700	15,000	1.02
Mechanical	14,500	15,000	1.03	14,500	15,800	1.09
Other	15,000	15,600	1.04	15,000	15,600	1.04
Scientist	11,000	13,000	1.18	10,000	12,000	1.20
Physical	11,100	10,400	.94	11,000	12,000	1.09
Environmental	13,000	15,400	1.18	11,500	15,400	1.34
Other	10,800	12,600	1.17	10,000	11,300	1.13
Other	9,600	10,400	1.08	12,000	12,000	1.00
Total	11,000	15,000	1.36	11,000	15,000	1.36

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

NOTE: All figures have been rounded to the nearest hundred. Salaries for respondents academically employed for 9 to 10 months have been adjusted by a factor of 11/9.

Table 11. Median Salary for Highest Degree: Bachelor's, Total Versus Energy-Related New Entrants

Field	Occupation			Major		
	Total	Energy-Related	Ratio of Energy-Related to Total	Total	Energy-Related	Ratio of Energy-Related to Total
Engineer	$14,000	$15,000	1.07	$14,000	$15,200	1.09
Chemical	15,600	16,800	1.08	15,800	16,800	1.06
Civil	13,400	15,000	1.12	13,500	14,900	1.10
Electrical and Electronic	14,200	15,000	1.06	14,000	14,900	1.06
Mechanical	14,300	14,500	1.01	14,400	15,500	1.08
Other	14,000	15,200	1.09	14,000	15,500	1.11
Scientist	10,000	12,000	1.20	9,600	11,300	1.18
Physical	10,400	10,700	1.03	10,000	11,400	1.14
Environmental	11,000	13,800	1.25	10,500	14,000	1.33
Other	10,000	12,800	1.28	9,500	11,000	1.16
Other	9,300	10,100	1.09	-	-	-
Total	10,000	14,400	1.44	10,000	14,400	1.44

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

NOTE: All figures have been rounded to the nearest hundred. Salaries for respondents academically employed for 9 to 10 months have been adjusted by a factor of 11/9.

Table 12. Median Salary for Highest Degree: Master's, Total Versus Energy-Related New Entrants

Field	Occupation			Major		
	Total	Energy-Related	Ratio of Energy-Related to Total	Total	Energy-Related	Ratio of Energy-Related to Total
Engineer	$16,800	$17,000	1.01	$16,800	$16,900	1.01
Chemical	16,800	17,500	1.04	16,800	16,800	1.00
Civil	15,200	17,400	1.14	15,800	17,400	1.10
Electrical or Electronic	18,000	17,000	.94	17,000	15,800	.93
Mechanical	17,400	18,500	1.06	17,000	18,500	1.09
Other	16,800	16,100	.96	16,700	16,000	.96
Scientist	13,400	14,700	1.10	13,400	15,900	1.19
Physical	13,500	-	-	14,000	14,000	1.00
Environmental	16,000	16,000	1.00	15,000	17,700	1.18
Other	13,200	12,000	.91	13,200	15,900	1.20
Other	13,000	11,800	.91	11,700	12,000	1.03
Total	13,500	16,500	1.22	13,500	16,500	1.22

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates.*

NOTE: All figures have been rounded to the nearest hundred. Salaries for respondents academically employed for 9 to 10 months have been adjusted by a factor of 11/9.

SECTION 2 — ENERGY-RELATED SCIENTISTS AND ENGINEERS IN 1976: A COMPARISON OF NEW ENTRANTS WITH THE EXPERIENCED WORK FORCE

OCCUPATION AND COLLEGE MAJOR

Table 13 presents a comparison of the percentage who are energy-related for the new entrants and experienced work force by college major and occupational field. It appears that the new entrants who majored in engineering are more apt to be involved in energy-related activities than the experienced population of engineering majors. Differences are most noticeable among the civil engineers (16.6% of new entrants, 8.1% of experienced work force) and mechanical engineers (24.5% of new entrants, 16.5% of experienced workers).

The data indicate that the percentage of new scientists going into energy-related work is much lower than the percentage of experienced energy-related scientists. Whereas almost one-half (48.9%) of the experienced environmental scientists are involved in energy-related work, only about one-quarter (26.6%) of the new entrants working as environmental scientists are energy-related.

One might also note from the data in Table 13 that the percentage of new entrants who are energy-related (4.6%) is much lower than the percentage of experienced scientists and engineers who are energy-related (12.0%). This is due, in part, to the fact that a larger proportion of the experienced work force is engineers (roughly 65%) while the majority of the new entrants are scientists (approximately 80%).

In comparing the college major with occupation of the energy-related scientists and engineers, one notes that a larger percentage of the new engineering majors than the experienced engineering majors have an occupation in engineering, while a smaller percentage of the new science majors than the experienced science majors are working as scientists (Table 14).

EDUCATIONAL ATTAINMENT

Table 15 compares the educational attainment of the new entrants with experienced scientists and engineers who are involved in energy-related activities. As is true throughout this report, our attention is restricted to those scientists and engineers whose highest degree is a bachelor's or master's.

Proportionately more of the new entrants involved in energy-related work hold master's degrees (33.4%) than do the experienced scientists and

engineers (27.3%). Most of the difference can be attributed to the engineers, as 33.8% of the new entrants and only 26.0% of the experienced hold master's degrees. Only the new mechanical engineers have a lower percentage of master's degree holders than the experienced.

Of the scientists, on the other hand, only the new environmental scientists show a higher proportion of master's degree holders (54.5%) than their experienced counterparts (37.2%)

SEX AND RACE

A much greater percentage of the new energy-related scientists and engineers are female (6.7% by occupation) than of the experienced energy-related group (1.0%), as shown in Table 16.

In contrast, Table 17 indicates the percentage of the new energy-related scientists and engineers who are nonwhite is lower (2.2% by occupation) than the percentage of nonwhite experienced scientists and engineers (3.3%).

TYPE OF EMPLOYER

A comparison of the energy-related new entrants with experienced scientists and engineers by type of employer is provided in Table 18. The energy-related new entrants are more likely to work at educational institutions (10.3%) than are their experienced counterparts (2.4%); otherwise, their distributions are quite similar.

PRIMARY WORK ACTIVITY

It is not surprising to find that the experienced scientists and engineers are more often involved in management activities than are the energy-related new entrants (Table 19). The experienced workers are also more involved in consulting activities. A larger percentage of the new entrants than the experienced are found in basic and applied research and quality control activities.

EARNINGS

Median annual salaries of the new and experienced scientists and engineers who were working full-time are compared in Table 20. As expected, the salaries of the experienced workers are higher than those of the new entrants.

However, more insight may be gained by looking at the ratios of the energy-related to total population salaries for the two groups. Salaries for both new and experienced energy-related engineers are 6% higher than those for all engineers. The effect on median salaries of being involved in

energy-related activities is most pronounced for new civil engineers (16%) and experienced chemical engineers (10%).

Overall, both new and experienced energy-related scientists earn higher salaries (18% and 20%, respectively) than does the total population of scientists. However, the new energy-related physical scientists earn less than the population of new physical scientists as a whole while the experienced energy-related physical scientists earn more than the total experienced group. In contrast, the effect of being involved in energy-related activities is more favorable for the new environmental scientists (18% higher salaries) than it is for their experienced counterparts (8%).

Table 13. Percentage Energy-Related, New Entrants Versus Experienced Workers

Field	Major		Occupation	
	New Entrants	Experienced	New Entrants	Experienced
Engineer	17.5%	13.6%	21.0%	14.3%
Chemical	23.2	21.5	29.0	23.7
Civil	16.6	8.1	17.1	7.5
Electrical or Electronic	14.3	11.3	18.5	12.0
Mechanical	24.5	16.5	31.4	18.8
Other	15.5	14.4	18.8	14.6
Scientist	1.8	8.6	3.4	8.9
Physical	4.3	8.4	6.5	7.4
Environmental	16.8	44.6	26.6	48.9
Other	1.3	3.3	2.0	3.4
Other or No Response	.4	8.9	1.5	9.4
Total	4.6	12.0	4.6	12.0

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers*.

Table 14. Comparison of Major Field of Study for Highest Degree Held and Occupation, Energy-Related New Entrants Versus Energy-Related Experienced Workers

Major	Percentage with Occupation Same as College Major	
	New Entrants	Experienced
Science and Engineering	79.9%	74.3%
Engineering	91.1	76.7
Science	55.5	64.7

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers*.

NOTE: For the purposes of this table, a person whose major field of study for the highest degree held is any area of engineering (science) is considered to have an occupation the same as his college major if his current employment is in any type of engineering (science).

Table 15. Educational Attainment by Occupation, Energy-Related New Entrants Versus Energy-Related Experienced Workers

Occupation	New Entrants		Experienced	
	Bachelor's	Master's	Bachelor's	Master's
Engineer	65.6%	33.8%	74.0%	26.0%
Chemical	59.1	40.9	64.6	35.4
Civil	60.5	39.5	69.0	31.0
Electrical or Electronic	63.3	36.7	77.3	22.7
Mechanical	81.8	18.2	76.6	23.4
Other	61.5	36.9	73.6	26.4
Scientist	59.8	40.2	60.5	39.5
Physical	62.7	37.3	58.7	41.3
Environmental	45.5	54.5	62.8	37.2
Other	66.8	33.2	57.0	43.0
Other	80.1	19.9	78.3	21.7
Total	66.2	33.4	72.7	27.3

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates* and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers.*

Table 16. Percentage Female,
Energy-Related New Entrants Versus Energy-Related Experienced Workers

	New Entrants	Experienced
Major		
Science and Engineering	8.3%	0.9%
Engineering	3.1	.2
Science	19.5	3.5
Occupation		
Scientists and Engineers	6.7%	1.0%
Engineers	3.7	.2
Scientists	18.3	4.3

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers.*

Table 17. Percentage Nonwhite,
Energy-Related New Entrants Versus Energy-Related Experienced Workers

	New Entrants	Experienced
Major		
Science and Engineering	2.4%	2.9%
Engineering	3.1	3.1
Science	1.0	2.3
Occupation		
Scientists and Engineers	2.2%	3.3%
Engineers	2.3	3.3
Scientists	1.7	3.3

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers.*

Table 18. Type of Employer by Occupation,
Energy-Related New Entrants Versus Energy-Related Experienced Workers

Type of Employer	All Scientists and Engineers		Engineers		Scientists	
	New Entrants	Experienced	New Entrants	Experienced	New Entrants	Experienced
Educational Institution	10.3%	2.4%	7.4%	2.4%	21.4%	2.6%
Nonprofit Organization	2.2	1.8	1.5	1.6	4.7	2.4
Federal Government	5.7	6.3	5.6	5.8	6.5	8.2
State and Local Government	2.1	2.6	2.1	2.5	1.9	3.1
Private Industry	78.1	80.2	81.4	82.2	65.6	71.5
Other	1.6	6.7	2.0	5.4	0	12.3

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers*.

Table 19. Primary Work Activity by Occupation,
Energy-Related New Entrants Versus Energy-Related Experienced Workers

Primary Work Activity	All Scientists and Engineers		Engineers		Scientists	
	New Entrants	Experienced	New Entrants	Experienced	New Entrants	Experienced
Management or Administration	8.8%	26.3%	9.2%	27.6%	7.4%	20.6%
Basic Research	6.6	1.1	4.9	.4	13.6	4.5
Applied Research	14.1	5.4	11.6	3.1	23.4	15.2
Development	10.9	10.8	10.3	10.7	13.2	11.1
Design	19.8	15.6	24.6	18.8	.8	1.6
Teachnig	1.1	.7	.4	.6	4.1	1.1
Report and Technical Writing	1.6	3.0	.8	2.6	4.6	4.7
Production, Operations	12.1	11.4	13.9	12.8	5.2	5.1
Consulting	5.8	8.8	6.2	8.3	4.6	10.9
Quality Control	6.8	3.7	6.2	3.5	9.0	4.7
Sales, Distribution	1.9	2.9	2.0	3.4	1.5	.4
Other	10.6	10.4	10.0	8.2	12.7	19.9

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graudates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers.*

Table 20. Median Salary by Occupation, New Entrants Versus Experienced Workers

Occupation	New Entrants	Experienced
All Scientists and Engineers	$11,000	$22,200
Energy-Related	15,000	24,000
	Ratio of Median Salaries, Energy-Related to Total	
Engineer	1.06	1.06
Chemical	1.04	1.10
Civil	1.16	1.07
Electrical or Electronic	1.06	1.01
Mechanical	1.03	1.00
Other	1.04	1.07
Scientist	1.18	1.20
Physical	.94	1.08
Environmental	1.18	1.08
Other	1.17	1.17
Other	1.08	1.15

Source: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*, and U. S. Bureau of Census/NSF, *1976 National Survey of Natural and Social Scientists and Engineers.*

APPENDIX A - QUESTIONNAIRE: Westat, Inc./NSF, *1976 National Survey of Recent Science and Engineering Graduates*

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

Dear Graduate:

We need your help in a major national study of the occupational experiences of recent college graduates in Science and Engineering. This project, sponsored by the National Science Foundation will obtain information from a scientifically chosen sample of 16,000 persons who earned Bachelor's or Master's degrees between July 1, 1973 and June 30, 1975. You are one of those chosen to be in this study.

The purpose of this study is to compile national statistics which will allow an appraisal of the employment and educational characteristics of scientists and engineers graduating since 1973. The resulting information will permit the Federal Government, universities and others to formulate science policies and programs and to make evaluations with regard to the science and engineering manpower potential of the nation.

The questionnaire on the following pages will take about 10-15 minutes of your time to complete, and a postage-paid envelope addressed to Westat, Inc. is enclosed for its return. Westat, Inc. has been selected by the National Science Foundation to assist in carrying out this survey.

We wish you to know that your completed questionnaire will be seen only by the immediate research staff and will be used for statistical purposes only. In compliance with the Privacy Act of 1974, no personally identifying information will be released to anyone.

We think you will find it interesting and invite your comments on the questionnaire items. In addition, if you have any questions on the survey or need any assistance in completing the questionnaire, please call (collect) Mr. Mark Waksberg or Mr. George K. Schueller at (301) 881-5310.

It would be of great help if you would complete and return the questionnaire within the next five days. If possible, we suggest that you do it now, while you have it in hand. We believe the importance of the study will justify the time you give to it.

The National Science Foundation would greatly appreciate your cooperation in this survey.

Very truly yours,

Charles E. Falk, Director
Division of Science Resources Studies

This information is solicited under the authority of the National Science Foundation Act of 1950, as amended. All information you provide will be treated as confidential and will be used for statistical purposes only. Information will be released only in the form of statistical summaries from which it will be impossible to identify information about any particular person. Your response is entirely voluntary and your failure to provide some or all of the requested information will in no way adversely affect you.

1976 NATIONAL SURVEY OF RECENT SCIENCE AND ENGINEERING GRADUATES
NATIONAL SCIENCE FOUNDATION

DEGREE AND EMPLOYMENT SPECIALTY LIST

Use this list for Questions 5 and 9. Find the number corresponding to the appropriate major field and mark it in the space provided in the questionnaire.

BIOLOGICAL SCIENCE

01 Agriculture, all fields
02 Anatomy and histology
03 Bacteriology
04 Biochemistry
05 Biology (general)
06 Biophysics
07 Botany, horticulture, plant pathology
08 Entomology
09 Forestry, all kinds
10 Genetics
11 Immunology
12 Marine/animal or life science
13 Microbiology
14 Physiology
15 Zoology
16 Other biological science

ENGINEERING

17 Aeronautical, aerospace, astronautical
18 Agricultural
19 Architectural
20 Chemical
21 Civil
22 Electrical or electronic
23 Environmental, sanitary
24 General
25 Industrial
26 Mechanical
27 Metallurgical, material
28 Mining, geol., petro.
29 Nuclear
30 Operations research, systems
31 Technology
32 Other engineering

PHYSICAL SCIENCE MATHEMATICS

33 Astronomy
34 Atmospheric science (meteorology)
35 Chemistry
36 Computer science and data processing
37 Earth science (geology, geophysics)
38 Geography
39 Mathematics
40 Oceanography
41 Physics
42 Statistics
43 Other physical sciences

SOCIAL SCIENCE

44 Anthropology
45 Economics, all fields
46 Linguistics
47 Political science (incl. government, international relations)
48 Public administration
49 Psychology (all fields except clinical)
50 Social work, all fields
51 Sociology
52 Other social science

ARTS AND HUMANITIES

53 Art, fine and applied
54 English (language and literature)
55 Foreign language and literature
56 History
57 Journalism, all fields
58 Music, all fields
59 Philosphy, all fields

BUSINESS

60 Accounting
61 Business Administration (general)
62 Finance
63 Marketing and sales
64 Management, all fields
65 Secretarial studies
66 Other business

EDUCATION

67 Art or music
68 Biological sciences
69 Business
70 Elementary
71 Mathematics
72 Physical education or recreation
73 Physical sciences
74 Secondary
75 Science education, other
76 Special education
77 Other education

PROFESSIONS, TECHNICAL FIELDS

78 Architecture or urban planning
79 Clinical psychology
80 Dentistry
81 Drafting or design, all fields
82 Home economics
83 Health technology (med., dental or lab.)
84 Law or pre-law
85 Library or archival science
86 Medicine or pre-medicine
87 Nursing
88 Pharmacy
89 Religion
90 Other health professions
91 Other

OTHER

92 Building trades
93 Communications (radio, T.V.)
94 Crafts (skilled), all fields
95 Law enforcement
96 Machine operation
97 Military science
98 Other, not elsewhere classified
99 Undecided

OMB No. 99-S/e003
Expires: December 1976

1976 SURVEY OF RECENT SCIENCE AND ENGINEERING GRADUATES
NATIONAL SCIENCE FOUNDATION

1. Date of Birth
Mo. Day Year

2. Citizenship
USA . . . 1
Non-USA . 2
(Specify country ____)

3. Sex
Male
Female

4. Race/Ethnic Identification:

White/Caucasian . 1
Black/Negro/or Afro-American . 2
American-Indian . 3
Mexican-American/ Chicano 4
Puerto Rican/ American. 5
Oriental. 6
Other Asian 7
Other (Specify) . . 8

5. List in the table below all undergraduate and graduate degrees, excluding honorary degrees, than have been awarded to you. Please use Specialty List on Page 2 for major field and number.

Type of Degree	Granted		Major Field (Use Specialties List)	
	Month	Year	Name	Number
Bachelor's				
Masters				
Doctorate				

PLEASE NOTE that in items 6-14a, information is requested for the current year as of the week of June 7, 1976

6. What was your employment status as of the period indicated? (CHECK ONLY ONE CATEGORY.)

Employed full-time, science or engineering related positions . . 1 Go to 7
Employed full-time, nonscience or nonengineering related position . 2 Go to 6a
Employed part-time, science or engineering related position. . . 3 Go to 6b
Employed part-time, nonscience or nonengineering related position . 4 Go to 6b
Postdoctoral appointment (fellowship, traineeship, research associateship, etc.). . . . . 5 Go to 7
Unemployed and seeking employment . 6 Go to 15
Unemployed and not seeking employment. . . . . 7 Go to 15
Retired and not employed. . . . . 8 Go to 15
Other (Specify): 9 Go to 15

6a. If you were employed full-time during the week of June 7, 1976, in a position unrelated to science or engineering, what was the MOST important reason for taking the position?

Prefer nonscience or nonengineering position. 1
Promoted out of science or engineering position. 2
Pay is better 3
Locational preference 4
Science or engineering position not available 5
Other (Specify): 6
(Go to Q. 7)

6b. If you were employed part-time during the week of June 7, 1976, were you seeking full-time employment?

Yes . . . 1 No . . . 2

7. Which category below best describes the type of organization of your principal employment? (CHECK ONLY ONE CATEGORY.)

Business or industry 11
Junior college, 2-year college, technical institute. 2
Medical school 3
Four-year college or university other than medical school. 4
Elementary or secondary school system. . . 5
Hospital or clinic 6
U.S. military service, active duty, or Commissioned Corps, e.g., UPHS, NOAA . . 7
U.S. government, civilian employee 8
State government 9
Local or other government. 10
(Specify): _____
International agency 11
Non-profit organization, other than hospital, clinic or educational institution. 12
Other (Specify): _____ 88

8. What was the primary (A) and secondary (B) work activity related to your position? (CHECK ONLY ONE BOX IN EACH COLUMN.)

	A	B
Management or administration of:		
Research and development. 1		
Other than research & development . . 2		
Both. 3		
Basic research. 4		
Applied research. 5		
Development of equipment, products, systems data. 6		
Design. 7		
Teaching. 8		
Report or other technical writing, editing 9		
Production. 10		
Consulting (Specify): 11		
Professional services to individuals. . 12		
Quality control, inspection, testing. . 13		
Sales, marketing, purchasing, estimating. 14		
Other (Specify): 15		

9. From the Degree and Employment Specialties List on Page 2, select and enter both the number and title of the specialty most closely related to your principal employment. Write in your specialty if it is not on the list.

Number Type of Specialty

10. What percent of time did you devote to each of the following activities?

	Percent
Management or administration of:	
Research and development.	
Other than research and development	
Basic research.	
Applied research.	
Development	
Design.	
Teaching.	
Consulting.	
Production.	
Other (Specify):	
TOTAL	100%

11. Please give the name of your principal employer (organization, company, etc., or, if self-employed write "self"), and actual place of employment.

_____
Name of Employer

_____
City State Zip Code

12. What was the basic annual salary* associated with your principal professional employment during the week of June 7, 1976 ?

$_____per year.

*NOTE: Basic annual salary is your annual salary before deductions for income tax, social security, retirement, etc., but does not include bonuses, overtime, summer teaching, or other payment for professional work.

If academically employed:

a. Check whether salary was for 9-10 months ☐ or 11-12 months ☐.

b. What was the title of your position?

- Professor . . . . . 1 ☐
- Associate Professor . . . . . 2 ☐
- Assistant Professor . . . . . 3 ☐
- Instructor . . . . . 4 ☐
- Lecturer . . . . . 5 ☐
- Teaching Assistant . . . . . 6 ☐
- Research Assistant . . . . . 7 ☐
- Other (Specify): _____ 8 ☐

Does not apply . . . . . 9 ☐

13. Listed below are selected topics of critical national interest. If you devoted a significant proportion of your professional time to any of these problem areas in the week of June 7, 1976, please check the box for the one on which you spent the MOST time.

- Education:
  - Teaching . . . . . 1 ☐
  - Other . . . . . 2 ☐
- Health . . . . . 3 ☐
- Defense . . . . . 4 ☐
- Environmental protection, pollution control . . . . . 5 ☐
- Space . . . . . 6 ☐
- Crime prevention and control . . . . . 7 ☐
- Food production and technology . . . . . 8 ☐
- Energy and fuel . . . . . 9 ☐
- Other mineral resources . . . . . 10 ☐
- Community development and services . . . 11 ☐
- Housing (planning, design, construction) . 12 ☐
- Transportation . . . . . 13 ☐
- Other (Specify): _____ 88 ☐

None of the above . . . . . 14 ☐

14. Was any of your work in the week of June 7, 1976 supported by U.S. Government funds?

- Yes . . . . . 1 ☐ Go to 14a
- No . . . . . 2 ☐ } Go to 15
- Don't Know . . . . . 3 ☐ }

14a. If yes, which of the following Federal agencies or departments were supporting the work? (CHECK ALL THAT APPLY.)

- NASA . . . . . 31 ☐
- National Science Foundation . . . . . 32 ☐
- Environmental Protection Agency . . . . . 33 ☐
- Energy Research and Development Administration (AEC) . . . . . 34 ☐
- Nuclear Regulatory Commission . . . . . 35 ☐
- Agency for International Development . . 36 ☐
- Department of Interior . . . . . 37 ☐
- National Institutes of Health, HEW . . . 38 ☐
- Alcohol, Drug Abuse and Mental Health Administration, HEW . . . . . 39 ☐
- Office of Education, HEW . . . . . 40 ☐
- Other HEW, (Specify): _____ 41 ☐

_____

- Department of Defense . . . . . 42 ☐
- Department of Commerce . . . . . 43 ☐
- Department of Agriculture . . . . . 44 ☐
- Department of Transportation . . . . . 45 ☐
- Department of Justice . . . . . 46 ☐
- Department of Housing and Urban Development . . . . . 47 ☐
- Other agency or department (Specify): 48 ☐

_____

Don't know source agency . . . . . 49 ☐

15. How many years of professional work experience, including teaching, have you had? (Professional experience includes those work activities in which you have been engaged requiring knowledge of your field at the baccalaureate or equivalent background.)

_____ Years

16. Which of the following best describes your current enrollment status? (MARK ONE ONLY.)

- Not a student . . . . . 1 ☐
- Graduate student (post baccalaureate):
  - Full-time . . . . . 2 ☐
  - Part-time . . . . . 3 ☐

THANK YOU FOR YOUR COOPERATION. PLEASE RETURN THE COMPLETED QUESTIONNAIRE IN THE ENCLOSED POSTAGE PAID ENVELOPE.

APPENDIX B - TECHNICAL NOTES

SAMPLE SIZE

Tables 21 and 22 provide sampling information. Table 21 presents the actual sample size of the energy-related new entrants by major field of study and highest degree held.

Table 22 provides the percentage energy-related for the new entrants by major field of study and highest degree held. For each percentage, the standard error of the estimate that will yield a 95% confidence interval has been calculated.

Table 21. Sample Size of Energy-Related New Entrants

Major	Total	Bachelor's	Master's
Engineering	240[a]	174	65
Chemical	27	18	9
Civil	38	25	13
Electrical or Electronic	48	36	12
Mechanical	59	49	10
Other	68[a]	46	21
Science	143	109	34
Physical	30	24	6
Environmental	40	26	14
Other	73	59	14
Other	1	0	1
TOTAL	384[a]	283	100

[a]Includes one respondent who holds a doctorate degree.

Table 22. 95% Confidence Intervals for Percentage Energy-Related of New Entrants

Major	Total	Bachelor's	Master's
Engineering	0.175 (±.048)	0.168 (±.055)	0.193 (±.095)
Chemical	.232 (±.158)	.196 (±.182)	.385 (±.316)
Civil	.166 (±.118)	.149 (±.139)	.199 (±.216)
Electrical or Electronic	.143 (±.099)	.141 (±.113)	.152 (±.203)
Mechanical	.245 (±.109)	.243 (±.119)	.272 (±.275)
Other	.155 (±.086)	.145 (±.101)	.166 (±.158)
Science	.018 (±.022)	.014 (±.022)	.036 (±.063)
Physical	.043 (±.072)	.036 (±.074)	.065 (±.196)
Environmental	.168 (±.115)	.125 (±.125)	.269 (±.230)
Other	.013 (±.026)	.011 (±.026)	.024 (±.080)
Other	.004 (±.122)	--	.044 (±.128)
Total	.046 (±.021)	.039 (±.022)	.075 (±.051)

FIELD CATEGORY DEFINITIONS

The fields listed for college major and occupation have been aggregated and matched among the lists provided with the two surveys. Table 23 gives the number codes used to define the indicated field on the three lists (in Appendixes A and C).

Table 23. Field Category Definitions

Field	*1976 National Survey of Recent Science and Engineering Graduates*	*1976 National Survey of Natural and Social Scientists and Engineers*	
	Degree and Employment Specialty List	Major Field of Study	Occupation
Engineer			
Chemical	20	535	403
Civil	21	536	404
Electrical or Electronic	22	537	405
Mechanical	26	543	407
Other	17-19, 23-25, 27-32	532-534, 538-542, 544-550	401, 402, 406, 408-413
Scientist			
Physical	33, 35, 38, 41, 43	560, 561, 564, 565, 568, 593	422, 424, 427
Environmental	34, 37, 40	563, 566, 567	423, 425, 426
Other	1-16, 36, 39, 42 44-49, 51, 52, 78 79, 86, 90	500-526, 551, 553, 556-559, 569-577, 580-587	414-421, 428-441

APPENDIX C - QUESTIONNAIRE: U. S. Bureau of Census/NSF,

1976 National Survey of Natural and Social Scientists and Engineers

O.M.B. No. 41-S75095; Approval Expires December 31, 1978

FORM PMS-26A (10-30-76)

U.S. DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS

1976 NATIONAL SURVEY OF NATURAL AND SOCIAL SCIENTISTS AND ENGINEERS

NOTICE – Your report to the Census Bureau is confidential. It may be seen only by sworn Census employees and may be used only for statistical purposes.

Please read instructions carefully before answering questions.

Answer as accurately as you can by printing your reply clearly or by entering an "X" in the box next to the appropriate reply.

When the instructions for a question direct you to enter a code and description from a list, please refer to the reference list attached to this questionnaire.

A. Is the information shown in the mailing label above correct?

☐ YES

☐ NO – *Please enter the correct information*

Name

Number and street

City or town [010] | State (if USA) [011] | ZIP code

Foreign country

B. Is this mailing address the same address as your place of residence?

☐ SAME

☐ DIFFERENT – *Please enter your city and State or foreign country of residence.*

City or town | State (if USA) | ZIP code

Foreign country

Dear Friend:

Thank you for your continued cooperation in the National Sample of Scientists and Engineers, a series of biennial surveys sponsored by the National Science Foundation and conducted by the Bureau of the Census. From this series, a comprehensive picture of the development and utilization of America's scientists and engineers is being obtained. And, since the surveys include a sample of persons from various other fields, in addition to science and engineering, a valuable measure of the employment and skills among the highly educated population in general has been gained. Statistical data from these surveys are used for planning and analysis by Federal and State manpower agencies, private businesses, nonprofit research organizations, industrial and trade associations, and universities. Your cooperation, of course, has been an essential element in the success of this program.

To extend the value of past surveys, the National Science Foundation has asked the Bureau to survey this sample of persons once again to collect current employment information and related data. This is the most reliable and least costly way to learn, for example, how the employment of highly trained persons is affected by fluctuations in the economy. For the survey to be successful and yield truly representative information, it is important that each person fill out and return the questionnaire.

Please complete the questions which follow on pages 2 through 4 and return your questionnaire in the enclosed preaddressed envelope. For some questions you are instructed to enter a code and description from Reference List A, B, or C. These lists are attached to the questionnaire.

This information is being collected under the authority of the National Science Foundation Act of 1950, as amended. The information you provide is confidential and may be seen only by sworn employees of the Bureau of the Census. The information cannot be used for anything but statistical purposes and cannot be given to any other Government agency, private concern, or individual. The data will be released only in the form of statistical summaries from which it will be impossible to identify information about any particular person. Your response is entirely voluntary and your failure to provide some or all of the requested information will in no way adversely affect you.

Thank you for your cooperation,

Sincerely,

Vincent P. Barabba

VINCENT P. BARABBA
Director
Bureau of the Census

Enclosure

PART I – EDUCATION AND TRAINING

1. EDUCATION FROM 1972 TO THE PRESENT

a. Since January 1972 have you attended any college, university, or other post high school institution?

012 1 [ ] Yes – *Continue with 1b* 2 [ ] No – *Skip to question 2*

b. List below each institution from which you have obtained (since January 1972) or are currently obtaining formal training beyond the high school level, and give the other information requested. Begin with the most recent and work back through January 1972. Use a separate row for each degree granted or worked for. Designate degrees by abbreviation (e.g., A.A., B.A., M.A., Ph.D., LL.B., M.D., etc.).

	College, university, or other post high school institution (Enter Name and State or foreign country)	Type of degree worked for, if any (Enter Ph.D., M.A., B.A., A.A., etc. or mark "None" box)	Major field of study (Enter code and description from Reference List A)	Year degree was awarded or will be awarded. (Enter year or mark "None" box)
MOST RECENT	013 [ ][ ][ ] Name _____ State or foreign country _____	014 _____ OR x [ ] None	015 [ ][ ][ ] ← Code Description _____	016 19 _____ OR x [ ] None
2ND TO LAST	017 [ ][ ][ ] Name _____ State or foreign country _____	018 _____ OR x [ ] None	019 [ ][ ][ ] ← Code Description _____	020 19 _____ OR x [ ] None
3RD TO LAST	021 [ ][ ][ ] Name _____ State or foreign country _____	022 _____ OR x [ ] None	023 [ ][ ][ ] ← Code Description _____	024 19 _____ OR x [ ] None

2. OTHER TRAINING RECEIVED IN 1974 OR 1975

Aside from formal education, which of the following types of training did you receive in 1974 or 1975?

Mark the appropriate year for each type of training you have received.

	025 1974	026 1975
1. On-the-job training	1 [ ]	1 [ ]
2. Military training applicable to civilian occupations	2 [ ]	2 [ ]
3. Extension or correspondence courses	3 [ ]	3 [ ]
4. Courses at employer's training facility	4 [ ]	4 [ ]
5. Courses at adult education center	5 [ ]	5 [ ]
6. Other training	6 [ ]	6 [ ]
7. None	7 [ ]	7 [ ]

PART II – EMPLOYMENT STATUS

PLEASE NOTE that in items 3a–5 information is requested for both the current year, as of the week of February 8–14, 1976, and last year, as of the week of February 9–15, 1975. Please answer applicable questions in column (A), then in column (B).

	Week of February 8–14, 1976 (A)	Week of February 9–15, 1975 (B)
3a. What was your employment status as of the week indicated?	027 1 [ ] Employed full time – *Skip to 4a* 2 [ ] Employed part time – *Answer 3b* 3 [ ] On post doctoral appointment (fellowship, traineeship, research associate, etc.) – *Skip to 4a* 4 [ ] Unemployed and seeking work – *Go to column (B)* 5 [ ] Not employed and not seeking work – *Skip to 5*	028 1 [ ] Employed full time – *Skip to 4a* 2 [ ] Employed part time – *Answer 3b* 3 [ ] On post doctoral appointment (fellowship, traineeship, research associate, etc.) – *Skip to 4a* 4 [ ] Unemployed and seeking work – *Go to Part III* 5 [ ] Not employed and not seeking work – *Skip to 5*
b. If you worked part time, were you seeking full-time work?	029 1 [ ] Yes 2 [ ] No } *Continue with 4a*	030 1 [ ] Yes 2 [ ] No } *Continue with 4a*
4a. Were you working in a position related to science or engineering?	031 1 [ ] Yes – *Go to top of column (B)* 2 [ ] No – *Answer 4b*	032 1 [ ] Yes – *Go to Part III* 2 [ ] No – *Answer 4b*
b. What was the most important reason for taking this position?	033 *MARK ONLY ONE BOX* 1 [ ] Preferred nonscience or nonengineering position 2 [ ] Promoted out of science or engineering position 3 [ ] Pay was better in nonscience or nonengineering position 4 [ ] Locational preference 5 [ ] Science or engineering position not available 6 [ ] Other – *Specify* _____ *(Go to top of column B)*	034 *MARK ONLY ONE BOX* 1 [ ] Preferred nonscience or nonengineering position 2 [ ] Promoted out of science or engineering position 3 [ ] Pay was better in nonscience or nonengineering position 4 [ ] Locational preference 5 [ ] Science or engineering position not available 6 [ ] Other – *Specify* _____ *(Go to Part III)*
5. If you were not employed and not seeking work, were you principally	035 *MARK ONLY ONE BOX* 1 [ ] Retired 2 [ ] Other – *Specify* _____ *(Go to top of column B)*	036 *MARK ONLY ONE BOX* 1 [ ] Retired 2 [ ] Other – *Specify* _____ *(Go to Part III)*

PART III – JOB ACTIVITIES

INSTRUCTIONS FOR COMPLETING QUESTIONS 6–16b

a. Complete column (A) for questions 6–16b for the job held during the week of February 8–14, 1976 or for your most recent prior job held.

b. Column (B) should be completed **only** if the job you had during the week of February 9–15, 1975 differed from the job described in column (A). If the job was the same, mark the "YES" box at the top of column (B). **NOTE:** Consider a change of jobs to have occurred if (1) you changed employers; or (2) you remained with the same employer but there were significant changes in duties, levels of responsibility, or occupation; or (3) you worked at a different institution while on sabbatical leave from a college or university.

c. If you held more than one job during the weeks mentioned above, please report only the job at which you worked the greatest number of hours.

	Job held during week of February 8–14, 1976 or most recent prior job (A)	Job held during week of February 9–15, 1975 **Was this the same job as entered in column (A)?** 037 1 [ ] Yes – *Do not complete column (B)* 2 [ ] No – *Complete column (B)* (B)
6. Where did you work? *Write in city and State or foreign country of company, business, agency, or other employer.*	038 [ ][ ][ ] City _____	039 [ ][ ][ ] City _____
	040 [ ][ ][ ] State or foreign country _____	041 [ ][ ][ ] State or foreign country _____

PART III – JOB ACTIVITIES – Continued

	Job held during week of February 8–14, 1976 or most recent prior job (A)	Job held during week of February 9–15, 1975 (B)
7. What kind of business was this? *Enter code and description from Reference List B.*	042 [ ][ ][ ][ ] ← CODE Description _____	043 [ ][ ][ ][ ] ← CODE Description _____
8. What was your occupation? *Enter code and description from Reference List C.*	044 [ ][ ][ ][ ] ← CODE Description _____	045 [ ][ ][ ][ ] ← CODE Description _____
9. What work activities were related to this position? *Mark all activities in which you spent time.*	046 1 ☐ Management or administration of research and development 2 ☐ Management or administration of other than research and development 3 ☐ Teaching and training – preparing and teaching courses, guiding and counseling students or trainees 4 ☐ Basic research 5 ☐ Applied research 6 ☐ Development – product, process, and technical development 048 7 ☐ Report and technical writing, editing, information retrieval 8 ☐ Clinical diagnosis 9 ☐ Design – of equipment, processes, models 10 ☐ Quality control, testing, evaluation, or inspection 050 11 ☐ Operations – production, maintenance, construction, installation 12 ☐ Distribution – sales, traffic, purchasing, customer and public relations 13 ☐ Statistical work – survey work, forecasting, statistical analysis 052 14 ☐ Consulting 15 ☐ Computer applications 16 ☐ Other activities – *Specify* _____	047 1 ☐ Management or administration of research and development 2 ☐ Management or administration of other than research and development 3 ☐ Teaching and training – preparing and teaching courses, guiding and counseling students or trainees 4 ☐ Basic research 5 ☐ Applied research 6 ☐ Development – product, process, and technical development 049 7 ☐ Report and technical writing, editing, information retrieval 8 ☐ Clinical diagnosis 9 ☐ Design – of equipment, processes, models 10 ☐ Quality control, testing, evaluation, or inspection 051 11 ☐ Operations – production, maintenance, construction, installation 12 ☐ Distribution – sales, traffic, purchasing, customer and public relations 13 ☐ Statistical work – survey work, forecasting, statistical analysis 053 14 ☐ Consulting 15 ☐ Computer applications 16 ☐ Other activities – *Specify* _____
10. Among all the activities marked above which was your primary and which was your major secondary activity? *Fill in the appropriate code numbers (1 to 16) from question 9.*	CODE 054 _____ Primary 056 _____ Secondary	CODE 055 _____ Primary 057 _____ Secondary
11. What percent of working time did you devote to each of the following activities? ***PLEASE NOTE*** **Basic research** is study directed toward gaining scientific knowledge primarily for its own sake. **Applied research** is study directed toward gaining scientific knowledge in an effort to meet a recognized need. **Development** is direction of the knowledge gained from research toward production of useful materials, devices, systems, and methods. ***Entries in each column should sum to 100%***	058 _____ % Management or administration of research and development 060 _____ % Management or administration of other than research and development 062 _____ % Basic research 064 _____ % Applied research 066 _____ % Development 068 _____ % Design 070 _____ % Teaching 072 _____ % Consulting 074 _____ % Other – *Specify* _____ **100% TOTAL**	059 _____ % Management or administration of research and development 061 _____ % Management or administration of other than research and development 063 _____ % Basic research 065 _____ % Applied research 067 _____ % Development 069 _____ % Design 071 _____ % Teaching 073 _____ % Consulting 075 _____ % Other – *Specify* _____ **100% TOTAL**
12. Which category best describes the type of organization of your principal employment or post doctoral appointment?	076 *MARK ONLY ONE BOX* 01 ☐ Business or industry 02 ☐ Junior college, 2-year college, technical institute 03 ☐ Medical school 04 ☐ 4-year college or university, other than medical school 05 ☐ Elementary or secondary school system 06 ☐ Hospital or clinic 07 ☐ Non-profit organization, other than hospital, clinic, or educational institution 08 ☐ U.S. military service, active duty, or Commissioned Corps, e.g., USPHS, NOAA 09 ☐ U.S. Government, civilian employee 10 ☐ State government 11 ☐ Local or other government – *Specify* _____ 12 ☐ International agency 13 ☐ Self-employed 14 ☐ Other – *Specify* _____	077 *MARK ONLY ONE BOX* 01 ☐ Business or industry 02 ☐ Junior college, 2-year college, technical institute 03 ☐ Medical school 04 ☐ 4-year college or university, other than medical school 05 ☐ Elementary or secondary school system 06 ☐ Hospital or clinic 07 ☐ Non-profit organization, other than hospital, clinic, or educational institution 08 ☐ U.S. military service, active duty, or Commissioned Corps, e.g., USPHS, NOAA 09 ☐ U.S. Government, civilian employee 10 ☐ State government 11 ☐ Local or other government – *Specify* _____ 12 ☐ International agency 13 ☐ Self-employed 14 ☐ Other – *Specify* _____

Continue on Page 4

PART III – JOB ACTIVITIES – Continued

	Job held during week of February 8–14, 1976 or most recent prior job (A)	Job held during week of February 9–15, 1975 (B)
13. Between what dates did you hold this position? *Enter month and year*	078 From ____ 079 To ____ OR Present ☐	080 From ____ 081 To ____
14. What was the basic salary associated with this position? If you were on a post doctoral appointment, include stipend plus allowances. (Basic salary refers to salary before deductions for income tax, social security, retirement, etc. but does not include bonuses, overtime, summer teaching, or other payment for secondary jobs.)	082 $ _____.00 084 1 Per year 2 Per month 3 Per week **If academically employed, mark whether salary is for –** 086 1 9–10 months 2 11–12 months	083 $ _____.00 085 1 Per year 2 Per month 3 Per week **If academically employed, mark whether salary is for –** 087 1 9–10 months 2 11–12 months
15. During the previous year (1975 for Column A, 1974 for Column B), what was the basic salary associated with this position?	088 1 Did not hold this job in 1975 – *Skip to 16a* 090 $ _____.00 in 1975 092 1 Per year 2 Per month 3 Per week **If academically employed, mark whether salary is for –** 094 1 9–10 months 2 11–12 months	089 1 Did not hold this job in 1974 – *Skip to 16a* 091 $ _____.00 in 1974 093 1 Per year 2 Per month 3 Per week **If academically employed, mark whether salary is for –** 095 1 9–10 months 2 11–12 months
16a. Was ANY of your work supported or sponsored by U.S. Government funds?	096 1 Yes – *Continue with 16b* 2 No 3 Don't know } *Skip to 17a*	097 1 Yes – *Continue with 16b* 2 No 3 Don't know } *Skip to 17a*
b. Which of the following agencies or departments were supporting the work? *Mark as many as apply*	098 1 Department of Housing and Urban Development; 2 Department of the Interior; 3 Department of Labor; 4 Department of Defense; 5 Department of Commerce; 6 Department of Agriculture	099 1 Department of Housing and Urban Development; 2 Department of the Interior; 3 Department of Labor; 4 Department of Defense; 5 Department of Commerce; 6 Department of Agriculture
	100 7 Department of Transportation; 8 Department of Justice; Department of Health, Education, and Welfare: 9 NIH (National Institutes of Health); 10 Alcohol and Drug Abuse Mental Health Administration	101 7 Department of Transportation; 8 Department of Justice; Department of Health, Education, and Welfare: 9 NIH (National Institutes of Health); 10 Alcohol and Drug Abuse Mental Health Administration
	102 11 Office of Education; 12 Other H.E.W. – *Specify* ____; 13 NASA (National Aeronautic and Space Administration)	103 11 Office of Education; 12 Other H.E.W. – *Specify* ____; 13 NASA (National Aeronautic and Space Administration)
	104 14 NSF (National Science Foundation); 15 EPA (Environmental Protection Agency); 16 ERDA (Energy Research and Development Administration)	105 14 NSF (National Science Foundation); 15 EPA (Environmental Protection Agency); 16 ERDA (Energy Research and Development Administration)
	106 17 Nuclear Regulatory Commission; 18 AID (Agency for International Development); 19 Other agency or department – *Specify* ____	107 17 Nuclear Regulatory Commission; 18 AID (Agency for International Development); 19 Other agency or department – *Specify* ____
	108 20 Don't know source agency	109 20 Don't know source agency

PART IV – OTHER INFORMATION

17a. At anytime during calendar year 1975 were you without a job AND actively seeking employment?	110 1 Yes – *Continue with 17b* 2 No – *Skip to question 18*
b. For how many weeks were you seeking employment?	111 1 1 to 4 weeks; 2 5 to 10 weeks; 3 11 to 14 weeks; 4 15 to 26 weeks; 5 27 weeks or more
18. How many years of professional experience, including teaching, have you had? *Enter number of years*	112 _____ Years
19. Based on your total education and experience, what do you regard yourself as professionally? *Enter code and description from Reference List C.*	113 ☐☐☐ ← CODE Description _____
20. Listed at the right are selected topics of critical national interest. If you devote a significant proportion of your professional time to any of these problem areas, please mark the box for the one on which you spend the MOST time.	114 *MARK ONLY ONE BOX* 01 Health Education; 02 Teaching; 03 Other; 04 Environment protection, pollution control; 05 Space; 06 National defense; 07 Crime prevention and control; 08 Food production and technology; 09 Energy and fuel; 10 Other mineral resources; 11 Community development and services; 12 Housing (planning, design, construction); 13 Does not apply
21. In the event that it is necessary to contact you to clarify some of the information you provided, may we contact you by telephone? ☐ Yes – *Enter number(s) on which you can be reached* → ☐ No	Area code / Telephone number ____ Area code / Telephone number ____
22. Please enter the name of a person at an address other than yours through whom you can be reached.	Name / Address (Number and street) / City / State or foreign country / ZIP code
23. Print your name here	Date prepared

PLEASE DETACH BEFORE RETURNING YOUR COMPLETED QUESTIONNAIRE

REFERENCE LIST A – MAJOR FIELDS OF STUDY

This list is to be used in answering question 1b about the field(s) in which you have obtained study or training. It is divided into two sections: Section I is a list of fields of academic study generally leading to bachelor's or higher degrees; Section II is a list of fields of study and training below those generally leading to a bachelor's degree.

Please scan the entire list, choose the appropriate answer for the question and then enter the code and description in the appropriate section of question 1b. If none of the categories listed below adequately describes what you were studying or being trained in, use the "Other" category (code 600 or 625) and enter a brief description of what you were studying in the space provided on the questionnaire.

Section I – FIELDS OF ACADEMIC STUDY LEADING TO BACHELOR'S OR HIGHER DEGREES

Code	Description
	Biological and Agricultural Sciences and Related Fields
501	Agriculture, business
502	Agriculture, general
503	Agronomy, field crops
504	Anatomy and histology
505	Animal physiology
506	Animal science
507	Bacteriology, virology, mycology, parasitology
508	Biochemistry
509	Biology, general
510	Biophysics
511	Botany, general
512	Dairy science (dairy husbandry)
513	Entomology
514	Farm management
515	Fish and game or wildlife management
516	Food science (food technology and processing, dairy manufacturing and technology, food industry)
517	Forestry
518	Genetics
519	Horticulture
520	Immunology
521	Microbiology
522	Plant pathology
523	Plant physiology
524	Soil science (soil management, soil conservation)
525	Zoology, general
526	Biological and agricultural sciences, other fields
	Education
527	Biological sciences education
528	Mathematics education
529	Physical sciences education
530	Trade and industrial training
531	Education, other fields
	Engineering
532	Aerospace, aeronautical, astronautical, and related fields
533	Agricultural
534	Architectural
535	Chemical, petroleum refining
536	Civil, construction, transportation
537	Electrical, electronics
538	Engineering sciences, mechanics, physics
539	Engineering technology
540	Environmental/sanitary engineering
541	General or unified
542	Industrial
543	Mechanical
544	Metallurgical, materials, ceramics
545	Mining, mineral, geological
546	Naval architecture and marine engineering
547	Nuclear
548	Operations research/systems engineering
549	Petroleum
550	Engineering, other fields
	Health Fields
551	Medicine or premedicine, and clinical medical sciences
552	Nursing (4 year or longer program)
553	Pathology
554	Pharmacology
555	Pharmacy
556	Health professions, other fields (4 year or longer program)

Code	Description
	Mathematical Sciences
557	Mathematics
558	Statistics and actuarial sciences
559	Computer sciences and systems analysis
560	Operations research/management science
	Physical Sciences
560	Astronomy
561	Chemistry
593	Geography
563	Meteorology
564	Physics
565	Physical sciences, general
566	Geology and geophysics
567	Oceanography
568	Physical sciences, other fields
	Psychology
569	Clinical
570	Educational
571	General psychology
572	Psychology, other fields
	Social Sciences
573	Anthropology
574	Area studies, regional studies
575	Economics, agricultural
576	Economics, except agricultural
577	Foreign service programs
593	Geography
579	History
580	Industrial relations
581	International relations
582	Political science or government
583	Public administration
584	Social sciences, general
585	Social work, social administration, social welfare
586	Sociology
587	Social sciences, other fields
	Arts, Humanities, and Other Specialties
588	Arts, general
589	Business and commerce, including accounting, hotel and restaurant administration, and secretarial studies
590	English and journalism
591	Fine and applied arts, all fields
592	Foreign language and literature, all fields
593	Geography
594	Home economics, all fields
595	Law or prelaw
596	Library science
597	Military science, including merchant marine deck officer
598	Philosophy, all fields
599	Religion and theology, all fields
600	Other *(Describe briefly under the applicable item on the questionnaire.)*

Section II – FIELDS OF ACADEMIC STUDY AND OCCUPATIONAL TRAINING RELATED TO PROGRAMS BELOW THE BACCALAUREATE

Code	Description
	Data Processing-related fields of study or training
601	Computer programming
602	Computer operating
603	All other data processing fields of study or training
	Engineering-related fields of study or training
604	Drafting and design, all fields
605	Aeronautical technology
606	Architectural or building technology
607	Chemical technology
608	Civil technology
609	Electrical and electronics technology
610	Industrial technology
611	Mechanical technology
612	All other engineering-related fields of study or training
	Science-related fields of study or training
613	Agriculture
614	Forestry
615	Other science-related fields of study or training

Code	Description
	Other fields of study or training
616	Business and commerce-related fields of study or training
617	Craft (skilled) occupations-related fields of study or training (such as carpentry, bricklaying, tool and die making, etc.)
618	Educational-related fields of study or training
619	Home economics
620	Nursing and other health service-related fields of study or training
621	Operative occupations-related fields of study or training (such as machine operation, driving, inspecting, etc.)
622	Police technology or law enforcement
623	Sales and marketing-related fields of study or training
624	Service occupations-related fields of study or training (such as cook, beautician, firefighter, etc.)
625	All other fields of study or training *(Describe briefly under the applicable item on the questionnaire.)*

REFERENCE LIST B – KINDS OF BUSINESSES

This list is to be used in answering question 7 about the kind(s) of business or industry for which you worked. Please scan the entire list, choose the appropriate answer for the question and enter the code and description from this list. If none of the categories listed below adequately describes the kind of business for which you worked, use the "Other" category (code 731).

Code	Description
	Manufacturing
701	Aircraft, aircraft engines, aircraft parts
702	Chemicals and allied products
703	Electrical machinery, equipment and supplies for the generation, storage, transformation, transmission, and utilization of electrical energy
704	Electronic apparatus, radio, television and communication equipment and parts
705	Electronic computers, accounting, calculating and office machinery and equipment
706	Fabricated metal products (except ordnance, machinery and transportation equipment)
707	Machinery (except electrical) including engines and turbines, farming and construction machinery, mining, metalworking and other manufacturing and service industry machines
708	Motor vehicles and motor vehicle equipment including trucks, buses, automobiles, railroad engines and cars
709	Ordnance, including manufacture of arms, ammunition, tanks, and complete guided missiles, space vehicles and equipment
710	Petroleum refining and related industries
711	Primary metal industries, including smelting, refining, rolling, drawing, alloying, and manufacture of castings, forgings and other basic metal products
712	Professional and scientific equipment and supplies
713	Other manufacturing including printing and publishing
	Educational Institutions
714	College or university (offering at least a bachelor's degree)
715	Junior college or technical institute
716	Medical school
717	Other educational institutions
	Health Services
718	Hospital or clinic
719	Other medical and health services

Code	Description
	Other Kinds of Business
720	Agriculture, forestry, and fisheries
721	Business, personal, and professional services
722	Construction
723	Engineering or architectural services
724	Finance, insurance, or real estate
725	Mining and petroleum extraction
726	Private, nonprofit organizations other than educational institutions and hospitals
727	Professional and technical societies
728	Research institutions
729	Retail and wholesale trade
730	Transportation, communication, or other public utilities
731	Other *(Describe briefly under the applicable item on the questionnaire.)*
	Public Administration (Include only uniquely governmental activities, such as the U.S. Postal Service, U.S. Air Force, State court, Department of Motor Vehicles, city building inspection, or city public welfare. For example, if you work for the U.S. Postal Service use code 733, Federal public administration; on the other hand, if you work at a Veterans' Administration Hospital, use code 718, Hospital or clinic; if you work at a State university, use code 714, College or university; if you work for a county road building agency, use code 722, Construction; if you work in a Defense Department research laboratory, use code 728, Research institution.)
732	Uniformed military service
733	Federal public administration
734	State public administration
735	Local public administration (city, county, etc.)
737	Regional government
736	Other government

REFERENCE LIST C – OCCUPATIONS

This list is to be used in answering questions 8 and 19 about your occupational classification. Please scan the entire list, choose the appropriate entry and enter the code and description from this list. If you cannot find exactly the right entry, please choose the one that comes nearest to it. If none of the entries is at all appropriate, use the "Other" category (code 475) and enter a brief description in the space provided on the questionnaire.

Code	Description
	Engineers, including college professors and instructors
401	Engineer, aeronautical and astronautical
402	Engineer, agricultural
403	Engineer, chemical
404	Engineer, civil and architectural
405	Engineer, electrical and electronic
406	Engineer, industrial
407	Engineer, mechanical
408	Engineer, metallurgical and materials
409	Engineer, mining, petroleum, and geological
410	Engineer, nuclear
411	Engineer, environmental and sanitary
412	Engineer, operations research systems
413	Engineer, other fields *(Describe briefly under the applicable item on the questionnaire.)*
	Computer Specialist, including college professors and instructors
414	Computer programmer
415	Computer systems analyst
416	Computer scientist
417	Other computer specialist *(Describe briefly under the applicable item on the questionnaire.)*
	Mathematicians and Statisticians, including college professors and instructors
418	Actuary
419	Mathematician
420	Statistician
421	Operations research analyst
	Physical Scientists, including college professors and instructors
422	Chemist
423	Earth scientists including geologists, geophysicists, etc.
424	Physicist, astronomer
425	Atmospheric scientist, meteorologist
426	Oceanographer
427	Other physical scientist *(Describe)*
	Biological Scientists, including college professors and instructors
428	Agricultural scientists, including foresters and conservationists
429	Biological scientist
430	Biochemist
431	Biophysicist
432	Medical scientist, excluding persons who are primarily medical practitioners; see Health Occupations
433	Other biological scientist *(Describe)*
	Social scientists, including college professors and instructors
434	Economist
435	Psychologist
436	Sociologist or anthropologist
437	Other social scientist *(Describe briefly under the applicable item on the questionnaire.)*

Code	Description
	Health Occupations, including persons who are primarily practitioners. Persons engaged primarily in medical research, teaching, and similar activities use code 432, Medical scientist.
438	Physician or surgeon
439	Technician, dental
440	Technician, medical
441	Other health occupation *(Describe briefly under the applicable item on the questionnaire.)*
	Technicians and Technologists, except medical
442	Designer, electronic parts and machine tools
443	Designer, industrial
444	Designer, other
445	Draftsman
446	Surveyor
447	Technician, biological and agricultural
448	Technician, electrical and electronic
449	Technician, construction, highways, and architectural
450	Technician, mechanical
451	Technician, other engineering
452	Technician, physical science
453	Technician, other fields *(Describe briefly under the applicable item on the questionnaire.)*
	Teachers
454	Teacher, elementary school
455	Teacher, secondary school
456	Teacher, college and university, **excluding engineering and science** *(Engineering and science teachers see codes 401–437 above.)*
	Administrators, Managers, and Officials, excluding farm
476	Urban and regional planner
457	College president or dean
458	Administrator or manager, scientific and technical research and development
459	Administrator or manager, production and operations
460	Administrator, manager, or official, all other, excluding self-employed
461	Self-employed proprietor
	All Other Occupations
462	Accountant
463	Attorney or judge
464	Sales worker
465	Clerical worker (such as bookkeeper, secretary, etc.)
466	Clergy
467	Craft worker (such as baker, carpenter, electrician, mechanic, repair worker)
468	Farmer (owner, manager, tenant, or farm laborer)
469	Fire fighter or police
470	Laborer, except farm
471	Librarian
472	Merchant or shopkeeper, self-employed
473	Operative (such as assembler, factory worker, miner, welder, truck driver, etc.)
474	Postal worker
475	Other occupations, not specified above *(Describe briefly under the applicable item on the questionnaire.)*